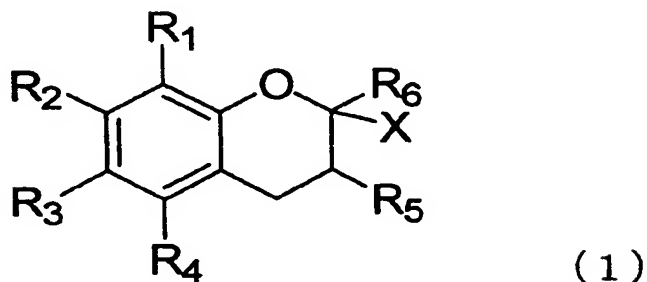


Claims

[1] A process for producing a chroman compound represented by formula (1):

[F1]



(wherein each of substituents R_1 to R_6 and X represents a hydrogen atom, a halogen atom, a hydroxyl group, a methoxy group, an ethoxy group, a carboxyl group, a C1 to C12 alkyl group which may have a substituent, a C6 to C12 aryl group which may have a substituent, a C7 to C12 aralkyl group which may have a substituent, or an ester residue; R_1 to R_4 may be linked to one another; and at least one of the substituents X and R_6 is an ester residue), characterized in that the process comprises allowing a phenol, an olefin, and a formaldehyde to react in the absence of catalyst and in the presence of water in an amount by mole 1 to 10 times that of the phenol.

[2] A process for producing a chroman compound as described in claim 1, wherein the phenol is an alkylphenol or a polyhydroxybenzene, and the olefin is a methacrylate ester.

[3] A process for producing a chroman compound as

described in claim 2, wherein the phenol is at least one member selected from the group consisting of 2-methylphenol, 3-methylphenol, 4-methylphenol, 2,3-dimethylphenol, 2,4-dimethylphenol, 2,5-dimethylphenol, 3,4-dimethylphenol, 3,5-dimethylphenol, 2,3,4-trimethylphenol, 2,3,5-trimethylphenol, 2,4,5-trimethylphenol, 3,4,5-trimethylphenol, 2,3,4,5-tetramethylphenol, hydroquinone, 1,4-dihydroxy-2-methylbenzene, 1,4-dihydroxy-2,3-dimethylbenzene, 1,4-dihydroxy-2,5-dimethylbenzene, 1,4-dihydroxy-2,6-dimethylbenzene, and 1,4-dihydroxy-2,3,5-trimethylbenzene, and the olefin is at least one member selected from the group consisting of methyl methacrylate, ethyl methacrylate, isopropyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, and 2-hydroxyethyl methacrylate.

[4] A process for producing a chromancarboxylic acid ester, the process including allowing a phenol, an olefin, and a formaldehyde to react in the absence of catalyst and in the presence of water, wherein the amount by mole of water caused to be present in the reaction system is 1 to 10 times that of the phenol.

[5] A process for producing a chromancarboxylic acid ester as described in claim 4, wherein the phenol is an alkylphenol or a polyhydroxybenzene, and the olefin is a methacrylate ester.

[6] A process for producing a chromancarboxylic acid ester as described in claim 5, wherein the phenol is at least one member selected from the group consisting of 2-

methylphenol, 3-methylphenol, 4-methylphenol, 2,3-dimethylphenol, 2,4-dimethylphenol, 2,5-dimethylphenol, 3,4-dimethylphenol, 3,5-dimethylphenol, 2,3,4-trimethylphenol, 2,3,5-trimethylphenol, 2,4,5-trimethylphenol, 3,4,5-trimethylphenol, 2,3,4,5-tetramethylphenol, hydroquinone, 1,4-dihydroxy-2-methylbenzene, 1,4-dihydroxy-2,3-dimethylbenzene, 1,4-dihydroxy-2,5-dimethylbenzene, 1,4-dihydroxy-2,6-dimethylbenzene, and 1,4-dihydroxy-2,3,5-trimethylbenzene, and the olefin is at least one member selected from the group consisting of methyl methacrylate, ethyl methacrylate, isopropyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, and 2-hydroxyethyl methacrylate.

[7] A process for producing a chromancarboxylic acid ester as described in any of claims 4 to 6, wherein the olefin and the formaldehyde are used in amounts in stoichiometrically excess of the amount of the phenol.

[8] A process for producing a chromancarboxylic acid ester as described in any of claims 4 to 7, wherein the formaldehyde is at least one member selected from the group consisting of formaldehyde and paraformaldehyde.

[9] A process for producing methyl 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate, characterized in that the process comprises allowing 1,4-dihydroxy-2,6-dimethylbenzene, methyl methacrylate, and a formaldehyde to react in the absence of catalyst and in the presence of water in an amount by mole 1 to 10 times that of 1,4-dihydroxy-2,6-

dimethylbenzene.

[10] A process for producing a chromancarboxylic acid, characterized by comprising hydrolyzing a chromancarboxylic acid ester produced through a process as recited in any of claims 4 to 8 or methyl 6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylate as recited in claim 9.